subscribers.[35] In addition, Cablevision has constructed on Long Island the fiber backbone of a high-speed communications network linking Stony Brook University and Brookhaven National Laboratory, termed FISHNet, using an ATM technology that allows voice, video and data images to be processed together.[36] Furthermore, U.S. cable companies, often working in collaboration with U.S. local telcos, are already offering cable telephone service to 15% of United Kingdom homes they pass and to 70 percent of the homes that subscribe to cable.[37]

Cable companies have also formed alliances with other telecommunications companies. MCI recently announced a joint trial with Jones Intercable to test phone service over the Jones cable network in Alexandria, Virginia. Another cable telephony trial was recently completed by US West and Time Warner in Orlando, Florida where AT&T provided the broadband switch for the "Full Service Network" being developed there. In June 1993, Teleport announced that it had signed letters of intent to establish joint ventures with 11 major cable operators to build new fiber networks and expand existing TCG networks (using some cable capacity for both projects).[38] In February 1993, Southwestern Bell purchased Hauser Cable. Southwestern Bell with its Hauser cable properties in Montgomery County, Maryland, has announced plans to offer telephone service, which will compete directly with Bell Atlantic. In May 1993, US West bought a 25 percent stake in Time Warner for $2.5 billion and BellSouth acquired 22.5 percent of Prime Management, which operates Prime Cable.[39] Bell Canada has purchased Jones cable. ***These "intermodal" alliances provide cable companies with significant financial backing and the technological know-how concerning the provision of two-way telephony and will thereby accelerate entry by cable companies into telecommunications***.

3. COMPETITION FROM IXCS

IXCs also plan to expand their offerings of local services. IXCs have been very active in the development of PCS and other wireless technologies. AT&T has been particularly active in the development of wireless technologies and its presence will grow if and when its merger with McCaw is completed. AT&T has signed a long term contract with CFW Communications in Virginia, an independent telephone company, to handle long distance directory assistance calls currently handled by Bell Atlantic in Virginia, West Virginia, Maryland, and Washington, D.C. MCI has developed extremely aggressive expansion plans despite its strong statements that LECs have a tremendous advantage over other potential providers of telecommunications services. MCI plans to spend $20 billion developing "network MCI", a national network providing local and long distance telephony services. Included in these plans is "MCI Metro" - a $2 billion plan to build local networks in 20 major cities. Through its purchase of Western Union conduits, MCI

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[35] Quittner, Joshua, "Cable's Vision", NEWSDAY, February 25, 1993, pp. 3 and 18.

[36] See "Cablevision Seeks to Catch Big Fish in its High-Speed Long Island Net," COMMUNICATIONS ENGINEERING AND DESIGN, April 1994, p. 8 and "Information Superhighway Adds Lane," CURRENTS, April 1994, p. 1.

[37] ICT News, Cable Television Association, October 1993..

[38] 1993 Connecticut Research, VII-80.

[39] Huber, p. 26.

already has rights of way to build networks in these cities. MCI has also invested in Nextel, a cellular provider. MCI has indicated that its investment in Nextel is an important component to MCI's entry into local exchange services.[40] Nextel's digital wireless service will be integrated with Network MCI[41] and will operate in all of the nation's top 10 markets.[42] In addition, its alliance with British Telecom provides MCI with significant resources with which to conduct its expansion, as does the recent infusion of capital from France Telecom and Deutsche Telekom for Sprint.[43]

4. COMPETITION FROM SELF-SUPPLY BY IXCS AND END USERS

Although there are no known available data to quantify the amount of vertical integration by end users or IXCs into "self-supply" of access services, there is evidence that it is substantial. The D.C. Circuit Court of Appeals found that large national information service providers "not only can but already do bypass the BOCs by constructing private networks."[44] Also, sales of microwave facilities, which last for many years, to local exchange users have remained fairly steady, indicating that there may be a growing volume of usage.

> "The FCC reports that 36,528 private microwave networks were licensed through September 1993, a 1 percent increase over 1992. The largest users (70 percent) continue to be industrial entities, such as the pipeline, railroad, and oil sectors. Public services, which include state and local governments, fire departments, highway maintenance divisions, forestry conservators, police and special emergency users, held 22 percent of the private microwave network licenses. The remaining 8 percent belonged to land transportation organizations. Applications for multiple address systems, which are employed by each of the users listed above for point-to-multipoint applications, continued their upward trend.
>
> ...Corporations are making greater use of microwave radio in three applications: wireless local area networks (WLANs), wireless PBXs, and bypass systems. Advances in microwave engineering have increased data transmission capacity, making WLANs more attractive to corporate telecommunications managers.

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[40] MCI Chairman and Chief Executive Officer Bert C. Roberts Jr. told shareholders that MCI's investment in Nextel will provide the company with a "big opportunity to go after the local exchange market by providing cordless, wireless telephone service." "MCI Cites Nextel's Role in Local Competition Plans," TELECOMMUNICATIONS REPORTS, May 30, 1994, p. 16.

[41] "Cable Deal is Possibility: MCI Goes for 'Now' Wireless Technology for Nationwide Network," COMMUNICATIONS DAILY, March 1, 1994, p. 1.

[42] James Anderson, "MCI-Nextel-2 Special Mobile Radio Gains Strong Backer," DOW JONES NEWS SERVICE, February 28, 1994.

[43] Andrew Adonis, "US telecoms alliance for France and Germany", FINANCIAL TIMES, June 15, 1994, p.1+.

[44] United States v. Western Elec. Co., 993 F.2d 1572, 1579 (D.C. Cir. 1993).

> Wireless PBXs and bypass systems provide corporations that have scattered operations centers with an economic alternative to common carrier tolls."[45]

Other public and private bypass technologies -- cable, private fiber, private coaxial and private satellite -- are also ignored by a narrowly defined market. In some markets, these omissions include almost everything. "For many non-voice telecommunications services, telcos do not control 99 percent of access, they control close to 0 percent. ...[For] most video services, ...cable and satellite are in fact overwhelmingly favored."[46] Additionally, most electronic information services are provided through non-telco media, including stand-alone equipment, cable and wireless facilities.[47]

IXCs also provide direct connections for customers. Cellular providers generally bypass the LEC for access services and connect directly with the IXC:

> "In 1982, the Department of Justice estimated that an interexchange carrier would build access facilities to pick up the interLATA business of 5,000 or more customers. Today even the smallest cellular systems have well in excess of 5,000 subscribers. Thus, according to the economic theory accepted at divestiture, it is economically attractive for interexchange carriers to connect directly to cellular switches, bypassing the local network entirely. Once again, no precise data is available." (footnote excluded)[48]

In addition, some large private customers have installed microwave facilities to connect with the closest IXC "point of presence," where calls are collected and routed along the IXC's network.[49]

This highly dynamic environment of rapidly increasing competition compels immediate changes in LEC price caps and the adoption of transition mechanisms which can adapt to competition as it emerges. It is disingenuous of the very firms who are so rapidly increasing their market presence to argue that competition is *de minimis*, that "competitors we have, competition we do not."

H. Opponents' Actions and Public Statements Contradict Their Self-Serving Comments

It is directly relevant for the Commission to consider that much of the opposition to the price cap reforms proposed by USTA comes from the very competitors who stand to gain so much from continuing regulatory policies that limit competition and restrict the

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[45] U.S. Industrial Outlook 1994 -- Telecommunications and Navigation Equipment, pp. 30-12-30-13.

[46] Huber, p. 14.

[47] Ibid.

[48] Ibid, p. 10.

[49] U.S. Industrial Outlook, 1994, p. 30-13.

incentives and flexibility of LECs. The comments of CAPs, IXCs and cable operators demonstrate stereotypical "rent-seeking" behavior.[50]

Buchanan, Tullock and other students of public choice theory have long argued that growing corporate involvement in the political process is symptomatic of a fundamental and potentially debilitating change in the way business decisions are made in the U.S.[51] Notwithstanding the apparent attractiveness of rent seeking political strategies to individual firms and industry groups, the practice is problematic for society at large because it typically leads to a misallocation of resources and subsequent losses in productivity and real economic growth. Michael Porter maintains that the problem of rent-seeking is compounded when public policies constrain competition in a particular industry, thereby lessening the pressure on individual firms to upgrade their products and services.[52] Where this occurs, national competitiveness also suffers because the process of developing and deploying new technology is key to acquiring and maintaining global market share particularly in strategic, technologically intensive industries like communications.

Oster identifies three conditions that must be satisfied before strategic investment in the regulatory process by individual firms or groups of firms is likely to pay off.[53] First, the industry or industries in question must contain clearly identifiable or differentiated groups of firms, some of which can benefit from rules and regulations that give particular groups of firms a competitive advantage. Second, firms affected by the same regulations must be fairly interdependent in the sense that they compete for the same customers. Interdependence is key to "gaming" the regulatory process because it provides the vehicle by which comparative cost or product advantages are translated into increased market share and/or earnings growth. Third, there are some mobility barriers to moving between groups within the industries.

As discussed by Blau and Harris, all three of Oster's conditions for successful investment in the strategic use of regulation are very much in evidence in the U.S. telecommunications and information industries.[54] First, the industries are made up of several clearly identifiable subgroups, which have significant mobility barriers between and within industry segments.

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[50] Rent seeking behavior by a firm is the expenditure of resources in order to gain or maintain excess profits (i.e., revenues in excess of appropriately calculated economic costs). Earnings above costs are often referred to as "rents" by economists and thus the term "rent-seeking". The most common "rent-seeking" behavior is to lobby government officials to gain protection from competition. For further discussion, see Richard A. Posner, "The Social Costs of Monopoly and Regulation," JOURNAL OF POLITICAL ECONOMY, 83 (1975), pp. 807-27.

[51] See Gordon Tullock, "Rent Seeking", in The New Palgrave: A Dictionary of Economics, John Eatwell, Murray Milgate and Peter Newman, eds., New York: The Stockton Press, 1987, pp. 147-149.

[52] Porter, Michael E., Competitive Advantage of Nations. New York: The Free Press, 1990.

[53] Oster, Sharon, "The Strategic Use of Regulatory Investment by Industry Sub-Groups," ECONOMIC INQUIRY XX(4), October 1982, pp. 604-618.

[54] Blau, Robert A. and Robert G. Harris, "Strategic Uses of Regulation: The Case of Line-of-Business Restrictions in Communications," RESEARCH IN CORPORATE SOCIAL PERFORMANCE AND POLICY, James E. Post, editor; JAI Press, 1992.

Second, these industry subgroups are becoming increasingly interdependent in the sense that they often compete for the same customers. This has become all the more apparent in recent years as technological change has prompted virtually all of these industry groups to increase horizontal scope by expanding into one anothers' markets. The current regulatory restrictions, which inhibit LECs from competing on an even basis with entrants into access and exchange services, obviously satisfy Oster's third condition for investing in the political process.

While it is entirely legitimate for companies and industry associations to pursue their economic self-interest through the regulatory process, the Commission should be very wary of self-serving statements, especially when they are at odds with the actions and public statements of those same parties. As is discussed further below, there are stark differences between what competitors are saying to the Commission and what they are doing. Since "actions speak louder than words," it is the actions, not the comments, of these parties which the Commission should factor into its decision process. By observing what CAPs and IXCs are doing, and what they are saying to their constituents, such as securities analysts, the Commission can reduce the economic rents which benefit competitors at public expense.

Arguments made by opponents to price cap reform primarily rely on the following assertions: (1) LECs do not currently face competition; (2) significant competition to LECs will not occur for several years; (3) LECs have the ability to act strategically to disadvantage competitors and thus keep competition from emerging. The opponents, therefore, conclude that, rather than relax constraints on LECs, the Commission should impose more stringent restraints on LECs. The assertions underlying the opponents' arguments, however, are at odds with their own entry and investment decisions and with their public statements in other forums.

Commenters have stated that CAPs do not provide significant competition to LECs currently and the potential for LECs to act strategically to disadvantage them limits future potential growth by CAPs. For instance, MFS states, "unfortunately, the Commission's attempt to limit discrimination through pricing bands has proven inadequate, and has provided the LECs multiple opportunities to thwart emerging local competition."[55] ALTS also states that "the dominance of the LEC permits it to recoup short term price reductions through increased market share, to enjoy longer-term access to capital markets, and to fund its conduct through higher prices in less competitive markets. This type of activity, or even the threat of it, can and does impede competition."[56]

Contrary to the portrayal by CAPs, CAPs do provide significant competition to LECs, especially for access revenues from the most lucrative customers. As shown in Section G.1, CAPs have deliberately built their networks to serve the most lucrative customers. Thus, it is misleading to say LECs do not currently face competition. In some geographic areas, the competition is particularly strong. In addition, as shown in Table 1, CAPs have announced plans to build networks in many new cities.

Perhaps ***the strongest evidence of the rapid growth prospects of CAPs is their extraordinary market valuations.*** As explained by Dr. Larry Darby in his May 9 report to the

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[55] See MFS Comments, p. 14.

[56] See ALTS Comments, p. 25.

Commission, "stock values depend on perceived risk and expected return."[57] If the prospects for growth are so limited, or if the threat of anticompetitive conduct by LECs against CAPs is so high, why is MFS among the most highly valued companies in the world in relative terms? MFS ranked second in Business Week's market value ranking of firms with under $150 million in sales with a 1993 value of $1.9 billion on sales of $141 million.[58] The market clearly believes that these firms will continue to grow at rapid rates into the future. ***If potential strategic behavior by LECs were truly a significant hindrance to the future growth potential of CAPs, they would not be investing so heavily in the expansion of existing networks and the construction of new networks. Nor would their stock be so highly valued by the capital market.*** In addition, the statements that LECs have the incentive to act strategically against CAPs is at odds with the response of MFS to the recent court decision overturning the FCC's collocation requirement; MFS stated that the decision will have little effect on MFS because it has already reached voluntary agreements with many of the LECs.[59] If the LECs were truly acting strategically, they would not sign voluntary agreements with firms such as MFS.

Cable companies, particularly Time Warner have claimed that the provision of telephony services by cable companies is several years away.[60] ***However, as we have shown above, not only are cable networks already being used for the transmission of telephone signals but cable companies are investing heavily into upgrading their networks and pursuing other technologies (such as PCS) with the expressed intent of providing telephony services in the near future.*** Time Warner itself already has experimental programs begun in Rochester, New York and Orlando, Florida. In addition, one of the goals of the alliance between US West and Time Warner was for US West to provide technology and knowhow concerning the provision of telephony services to speed Time Warner's entry into this area. Thus, rather than being years away, competition from cable in the provision of two-way telephony services already exists and is likely to expand rapidly in the near future.

The IXCs argue that LECs will not face competition in the near future and that other potential competitors, including themselves, are at a significant disadvantage to LECs. This view is not consistent with the past history of IXC growth or the future aggressive plans to expand their networks and the range of services provided. The argument that IXCs are at a disadvantage relative to LECs is not credible. IXCs are companies as large or larger than LECs. AT&T ranked third in terms of market value, with a value of $71.0 billion, in the Business Week 1000 and had revenues for 1993 of $67.3 billion.[61] MCI and British Telecom, which agreed in June, 1993 to

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[57] Larry A. Darby, "Price Cap Reform, Financial Incentives and Exchange Carrier Investment," Attachment 3, Comments of United States Telephone Association, May 9, 1994, page 8.

[58] "The Business Week 1000," BUSINESS WEEK, March 28, 1994, p. 69.

[59] "Court Overturns F.C.C. Rules on Baby Bells," NEW YORK TIMES, June 11, 1994, p. 27.

[60] See Time Warner Comments, pp. 10-17; ALTS comments, p. 28; AT&T Comments, p. 12; and MCI Comments, p. 65.

[61] BUSINESS WEEK, p. 80.

invest $4.3 billion for a 20% stake in MCI, had combined revenues of $30.4 billion.[62] These companies, especially MCI and Sprint, have had very high growth rates over the past several years and their high market valuations relative to revenues indicate a market expectation that these growth rates will continue. MCI's market value was $14.8 billion on sales of $11.9 billion, while Sprint was valued at $12.6 billion on sales of $11.4 billion.[63] ***IXCs also have aggressive plans to expand into the provision of new services, particularly local exchange services.*** AT&T has been very active in the development of wireless technologies and MCI has committed to invest $20 billion to develop a national network capable of providing both local and long distance services. If AT&T and MCI were truly disadvantaged vis-à-vis the LECs, one would not expect them to have such aggressive expansion plans into the future.

I. TRANSITION MECHANISMS SHOULD NOT BE PREMISED ON A SET OF PRECONDITIONS

Not surprisingly, LEC competitors also urge that the Commission not adopt transition mechanisms until a whole host of conditions are met. This is a classic method of creating long-term delays in reforming regulation, while competitors exploit market opportunities created by regulatory limits on LECs. The basic premise of "preconditions" -- that all barriers to competition be removed and all local exchange markets by fully competitive before adopting transitional regulatory mechanisms -- is fundamentally misguided. ***The transition in question is the transition toward competition, and that transition is already well under way.*** The Commission needs transitional regulations that can keep pace with the transition that is occurring in the marketplace. After the transition, when full competition exists, there will be no need for transition mechanisms: the Commission can rely on effective competition to "regulate" prices and service offerings. ***During the transition, the Commission needs policy mechanisms that adapt to changing competitive conditions as they occur.*** While the Commission and other public policy makers should also act to remove any remaining impediments to competition, those are also part of the transition process, rather than pre-conditions for it.

AT&T, for example, identifies nine pre-conditions for adopting transition mechanisms.[64] The AT&T preconditions include items that are not relevant to competition in access services. Number portability, for example, might be relevant to competition in local exchange services, but it is not a significant factor in access competition. Customers do not need number portability to switch suppliers for special access or other high capacity services. In this proceeding, the Commission should consider access services separately, because competition in access services is further developed than competition in local exchange services

Moreover, several of the AT&T pre-conditions are not even within the Commission's jurisdiction. The first item, elimination of state franchise restrictions, is most definitely a matter of state prerogative. This does not mean that state restrictions on competition do not matter, rather that they are intrinsic to the transition mechanisms proposed by USTA. To the extent that state

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[62] The seven RBOCs had combined revenues of $84.2 billion. Ibid., p.80.

[63] The average market value to sales ratio for the Business Week 1000 was just under 1 for 1993. Ibid., p. 73.

[64] AT&T Comments, pp. 16-18.

franchise restrictions -- or any of the other preconditions sought by AT&T -- do actually restrict entry or limit access competition, the LEC will not be able to demonstrate sufficient competition to move geographic markets or services into a more competitive, more flexibly regulated classification.

To the extent the other factors identified by AT&T do inhibit competition, the Commission should recognize that adopting transition mechanisms now can actually expedite the removal of these limitations. If LECs know that regulation would automatically adapt to changed competitive conditions, they have greater incentives to support the removal of these restrictions.

J. LEC Price Cap Reforms Should Correspond in Certain Respects to Cable Regulations

As detailed above, there is growing competition between cable operators and local exchange carriers. Based on recent technological developments and corporate announcements by both cable companies and LECs, the competition between the two industries will really heat up over the next few years. As they digitize and install fiber into their coaxial networks, cable companies will be expanding rapidly into two-way, interactive telecommunications services. As they upgrade or replace their existing copper twisted-pair distribution facilities with fiber and/or coaxial cables, LECs will be offering video programming distribution and other broadband services under the Commission "video dialtone" provisions. The Commission had already found that, "by providing the distribution system that makes video programming 'available for purchase' by subscribers and customers, we conclude that video dialtone comes within the plain language of th[e effective competition] section of the [Cable] Act."[65]

Given this growing competition between cable operators and LECs, and the reregulation of cable rates by the Cable Act of 1992, the Commission should consider, in its regulation of the two industries, the implications of its regulation of one industry for the other. Because there are differences between the Communications Act and the Cable Act, as well as differences in industry economics and competitive dynamics, the respective regulations cannot be identical in all respects. One fundamental difference in regulatory treatment of LECs and cable operators is that, under the Commission's regulations, it is intended that rates for basic cable service be fully compensatory -- including a fair profit -- to the cable operator. In many states, by contrast, rates for basic telephone service do not recover economic costs, much less enable the LECs to earn a fair profit. Instead, regulated rate structures often impose cross-subsidies on LEC customers to support the LECs' universal service obligation. By raising prices on other services, these cross-subsidies are a major source of competitive disadvantage for LECs. They may also partially explain why the penetration rate of telephone service is approximately 95% of US households, but just 60% for cable service.[66]

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[65] Report and Order and Further Notice of Proposed Rulemaking, MM Docket 92-266, May 3, 1994, par. 20, p. 5650.

[66] For telephone company penetration rates, see "Monitoring Report: CC Docket 87-339, May 1993", Prepared by the Staff of the Federal-State Joint Board, p. 12. For cable penetration rates, see The Cable TV Financial Databook, Paul Kagan and Associates, June 1992. Note the 60% cable penetration

It is important, though, that the regulation of the cable and LEC industries be comparable or corresponding in certain fundamental respects. The lesson from surface freight transportation is clear: growing competition between two industries, whether railroads and motor carriers or cable operators and LECs, increases the need for comparable regulation, and also increases the distortions and disincentives of regulatory differences or asymmetries. As explained in Section D, the failure of the Interstate Commerce Commission to follow this principle caused enormous inefficiencies, competitive imbalances and economic dislocations.[67] Today, after fourteen years of reformed regulations that do treat the two industries even-handedly, there is healthy competition -- and cooperation in intermodal services -- between the two industries.[68]

There are a number of areas in which the industries should be accorded comparable or corresponding treatment. First, as already explained in Section C, ***the Commission should adopt comparable transition mechanisms that accommodate and facilitate increasing competition within and between the two industries***. Just as it is important to relieve cable operators of regulation once effective competition exists in a local market, it is important to free LECs to price more flexibility as competition in geographic areas or for specific services becomes effective. As LECs deploy video dialtone services in a franchise area, cable operators will be able to show effective competition and no longer be rate regulated. As cable operators increase their market penetration into access and local exchange services -- whether through their own networks or joint venture operations such as Teleport -- LECs should have the opportunity to demonstrate that they face effective competition and should be granted the flexibility to meet that competition.

Second, ***the Commission should strive to comparably reduce the cost and burdens of regulations on the two industries***. In its cable rate regulation order, the Commission has acknowledged, "the traditional utility rate setting process is notoriously complex and burdensome

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rate refers only to percentage of *TV households* that subscribe to cable. Thus, the percentage of all US households that subscribe may be somewhat lower.

[67] The ICC's decisions were compounded by differential legislative treatment, which exempted private motor carriage, contract motor carriage, and agricultural commodities from Federal regulation. With the artificial competitive advantage gained from rail rates set by the ICC to cover fully distributed costs, motor carriers took huge amounts of traffic from rail carriers even though their economic costs were higher. See Keeler, pp. 28-29

[68] Most importantly, the regulatory reforms of 1980 effectively deregulated rail rates wherever the railroad does not have "market dominance." Having finally been freed from onerous regulations, rail carriers have won back a substantial share of the traffic that they never should have lost to motor carriers in the first place, had regulation allowed fair competition. Today, the fastest growing class of rail service is intermodal -- trailers and containers moving on the line-haul portion by rail, with local pickup and delivery by truck. The shift to intermodal has dramatically reduced transportation costs to shippers, and also reduced energy consumption and highway congestion. According to MacDonald (above cite, p. 43), in the early 1900's, rail carried about 70% of the nation's freight. This number declined steadily up to 1980 to around 33 percent. Since then, rail share of intercity freight has increased to 38%. According to DISTRIBUTION, May 1994, p. 14, rail intermodal traffic for 1993 totaled more than 7 million containers and trailers. This was an increase from slightly more than 3 million in 1980. (Association of American Railroads, RAILROADS FACTS, 1986, p. 26.)

to regulators and regulatees alike."[69] For that reason, the Commission decided to use a "competitive benchmark" approach as the primary method of regulating cable rates. For the same reason, the Commission should adopt price cap reforms that will reduce the burdens of current regulations on LECs and the Commission staff. Each of the major reforms proposed by USTA -- ending earnings sharing and depreciation prescription and decodifying access rate elements -- would substantially reduce the complexities and burdens of the current price cap regime, which is an overlay on traditional rate of return regulation. Collectively, these reforms would constitute more comparable regulation of LECs and cable operators under the "competitive benchmark" approach adopted by the Commission.

Third, ***for the same reasons that the Commission has not adopted earnings sharing or depreciation prescription of cable operators, it should eliminate those provisions from the LEC price cap plan.*** In its orders, the Commission has explicitly recognized the need to assure investors of the potential cash flow and earnings required to justify continuing investments in video programming and cable network upgrades.[70] Hence, in the primary benchmark approach, there is no rate of return regulation; the treatment of profit in the "initial rates" (i.e., the applicable competitive benchmark as applied to an individual cable operator) embodies the profits being earned in the benchmark itself. In the alternative, cost of service, there is an explicit rate of return factor, but only for the initial rates. Thereafter, whether initial regulated rates were set by the benchmark or a cost of service showing, there is no further regulation of earnings. Prices will be allowed to rise annually by inflation (or possibly less if a productivity offset is adopted by the Commission).

Fourth, since it has yet to determine the productivity offset factor for cable, the Commission should take a logically consistent approach for both industries. The economically correct productivity offset in a price cap model is the expected rate of productivity gains in the future. The best indicator of future productivity gains is historical experience, over a sufficiently long period to reduce anomalous yearly fluctuations. ***Just as the Commission is not contemplating a "stretch factor" or "consumer dividend" for cable rates, it should not incorporate these additives in its LEC offset factor.*** Indeed, even without these additives, there would be an asymmetry between cable and LECs, because, if anything, cable productivity would be expected to increase over historic rates, as they install optical fiber in trunks and digital switches, which have been major sources of productivity gains for LECs in the past. In contrast, LECs have already largely deployed digital switches and optical fiber trunks, so there are fewer further productivity gains to be realized from these technologies by LECs. In addition, cable operators are less at risk with a productivity offset because program acquisition costs are treated as exogenous to the price cap, whereas most LEC costs are incorporated within the price cap.

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[69] Report and Order and Further Notice of Proposed Rulemaking, MM Docket 92-266, May 3, 1994, par. 8, page 5639.

[70] See, for example, the discussion at par. 56-66, pp. 29-33, Second Order on Reconsideration, Fourth Report and Order, and Fifth Notice of Proposed Rulemaking, MM Docket No. 92-266, March 30, 1994.

K. The Productivity Offset in the Price Cap Formula Should Be Lowered

For two main reasons, the Commission should correct the productivity offset in the LEC price cap. First, to promote economic efficiency by LECs and provide adequate investment incentives for LECs, the productivity offset should only embody normal expected productivity gains. The best indicator of future productivity over the long term is historical experience. To add on a "stretch factor" or "consumer dividend" reduces expected returns on investment, which reduces investment. Moreover, consumers have already received a "dividend" through the lower depreciation rates that are implicit in the initial rates covered by the price cap plan. In addition, the consumer productivity dividend that the Commission required the price cap LECs to include in their price cap formula will result in savings to customers of $975 million through June 30, 1995. Rates are now lower than they would otherwise have been due to this initial consumer dividend. Thus, even if the Commission were to eliminate the consumer dividend now, consumers would continue to benefit with lower rates that embed past dividends. USTA has estimated that future consumer gains resulting from previously granted consumer dividends equal $394 million annually. Consumers will also continue to receive a dividend from normal productivity gains.

Adopting the correct productivity offset does not necessarily mean higher rates, of course. Even with the high productivity offset in the current price cap plan, LECs will have charged prices $1.1 billion below the price caps. With competition increasing rapidly, prices will be set less and less by the price cap, more and more by market forces. Even so, it is important that LECs have the regulatory flexibility to raise prices by the amount of inflation less their expected productivity gains.

The second reason for lowering the productivity offset is to accord comparable regulatory treatment to LECs' access prices and basic cable rates. As explained in the prior section, the use of historic productivity experience is economically correct for both industries. Moreover, as a matter of social policy, there is no reason to accord any greater price protection to access services, which are reflected in the prices of long distance telephone calls, than to basic cable service, which, in the view of Congress, is a necessity for many families.[71] Over the long term, of course, growing competition in both industries will obviate the need for price regulation. In the interim, though, the Commission should adopt comparable productivity offsets for both to encourage efficient competition between the two industries.

Several commenters argue that the productivity offset should be increased because LECs have earned high profits under the current price cap formula. This argument is fallacious, for several reasons:

1. the profits earned by LECs are not excessive; they fall well within the range of normal profits, especially considering the steeply increasing business and regulatory risks faced by LECs.
2. the reported profits of LECs are biased upward by regulated depreciation rates that are well below economic levels; if corrected for depreciation bias, actual LEC profits are significantly lower.

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[71] See Cable Television Consumer Protection and Competition Act of 1992, Conference Report, September 14, 1992, p. 2-3.

3. productivity gains fluctuate widely in the short run, whatever the long run rate may be in an industry; hence, one should not draw inferences about long term changes in productivity from short run experience.
4. even if LEC profits did increase slightly under the current price cap plan, that would only indicate that the incentives of price caps are working; to increase the productivity offset now would strip away the very incentives that price caps were intended to create.[72]

L. THE GROWTH FACTOR IN THE PRICE CAP FORMULA SHOULD BE REVISED

In addition to correcting the productivity offset to reflect expected productivity gains, the Commission should eliminate the common line adjustment factor from the price cap formula. In any industry -- certainly in telecommunications -- output growth has been a major source of productivity gains. As output grows, carriers are able to realize additional scale economies and justify faster replacement with more technologically advanced equipment. Therefore, the productivity offset already incorporates these effects of growth, so the price cap formula should not "double count" the effects of growth by adding a common line adjustment factor.

Several IXCs argue, in contrast, that the current 50/50 formula should be revised in the opposite direction, to a minutes per line formula that would effectively deny LECs any of the benefits of growth in demand.[73] IXCs argue that LECs do not stimulate demand, so they should not get any credit for growth in demand. This argument is specious. One of the most important causes of demand growth is falling prices for interexchange services, which reflect steep decreases in the prices of access services. LECs also contribute to demand growth through (1) new service offerings, such as call waiting and voice mail, which increases call completion rates; and (2) improved network technologies, such as SS7, which speed call completions, especially for 800 calls, one of the fastest growing long distance services. Moreover, by removing obstacles to new services and granting pricing flexibility in competitive access markets, the reformed price cap plan will substantially increase opportunities for LECs to further stimulate demand for interexchange services. Thus, the common line adjustment should be eliminated.

M. THE "NEW INSTITUTIONAL ECONOMICS" SUPPORTS USTA'S PROPOSED PRICE CAP REFORMS

The Association of Local Telecommunications Services urges the Commission to adopt a "new paradigm" for regulating access and local exchange services. They rely on a report by Duvall and Williams, which posits that the Commission should base its price cap and access policies on

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[72] Even worse than increasing the productivity factor in future years, MCI proposes a one-time rate adjustment to "take away" any gains that LECs may have realized under current plan [*See* MCI Comments, p. 18]. Not only would that constitute retroactive ratemaking; it would also be the worst form of recontracting: changing the rules after the fact. The surest way to reduce the positive effects of any form of incentive regulation is to change the rules *ex post*.

[73] As in their characterization of LECs' market share, IXCs misstate "demand growth" by only counting their purchases of access from LECs. This is an increasingly biased measure of the total demand for access services, because it does not include access services provided by CAPs, IXCs or customers.

transactions cost analysis, rather than the traditional "structure-conduct-performance" (S-C-P) model. ALTS is logically inconsistent in arguing that S-C-P is outmoded; indeed, it relies heavily on the tenants of S-C-P in arguing that LECs have market power. In fact, the static version of S-C-P used by ALTS is outmoded, relying as it does solely on market share as an indicator of market power. The modern version of S-C-P incorporates (1) industry dynamics, such as technological innovation; (2) changes in demand conditions, such as more sophisticated customers with greater bargaining power *vis à vis* suppliers; and (3) broader measures of competitive dynamics, including productive capacity and changes in competitive dynamics.

Transaction costs analysis -- the core idea of the "new institutional economics -- also has a contribution to regulatory and competition policy, as a complement to the S-C-P paradigm. The Duvall and Williams report, however, is a complete misapplication of transaction cost analysis (TCA); properly understood and applied, TCA generates opposite conclusions. The central lesson and policy implication of TCA and, more broadly, the new institutional economics, is that that major driving force in organizational structures is the need to minimize transaction costs. The seminal work on this subject is Oliver Williamson's Market and Hierarchies, in which he challenges the traditional assumption of the static S-C-P model, which assumed that the major reason for vertical integration by a firm is its quest for market power. Williamson posits, instead, that firms vertically integrate to reduce transactions costs.

> "But vertical integration is mainly explained by the costs of writing and enforcing interfirm contracts that are avoidable, in large measure, by resorting to internal organization. That firms do not fully displace intermediate product markets is because internal organization, mainly for bureaucratic reasons, is also costly."[74]

Hence, along a continuum from "pure" market to "complete" integration, firms will seek that organizational form which makes best use of markets and hierarchies. This result is, to be sure, a powerful contribution to our understanding of organizations and industry dynamics. As to policy implications, Williamson is also clear. Much of the traditional antitrust posture was, in his view, misguided, because it neglected the benefits of transactions cost minimizing behavior in vertical relations.

> "Policy analysts of this tradition [the structure-conduct-performance paradigm], including especially many economists at the Federal Trade Commission, often impute anticompetitive purposes to complex or unfamiliar business practices when instead the principal object of the practices is transactional efficiency. A hostility to complex business organization -- be it vertical integration, conglomerate organization, novel credit or leasing arrangements, and the like -- commonly obtains."[75]

In no small part due to Williamson's insights, vertical antitrust policies have changed substantially. Yet ALTS not only ignores these policy implications, it urges opposite conclusions. It would have

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[74] Oliver Williamson, Markets and Hierarchies: Analysis and Antitrust Implications, New York: The Free Press, 1975, p. 194 (footnote excluded).

[75] Ibid., p. 251. Williamson does not state that vertical integration cannot cause anticompetitive harm, but rather that, in most cases, minimization of transactions costs provides the main explanation for vertical integration and policymakers should recognize this in their review of vertical practices.

the government -- rather than private -- decisionmakers determine what is the optimal combination of markets and hierarchies. It would have the government "give" property rights to ALTS' members by "taking them away" from LECs. As argued by the Court of Appeals in overturning the Commission's co-location decision, there are constitutional protections against such "takings," and for good reason: it is bad economic policy, on two counts.

First, as already noted, government agencies should, as a general rule, allow private parties to determine the optimal contractual arrangements and organizational forms. In reaction to the Appellate Court ruling on co-location, for example,

> "Royce Holland, president of MFS, said the ruling would have only a minimal effect, because his company had already reached voluntary agreements with several local telephone companies, including Nynex. In addition, he said, the company has struck a number of "virtual" co-location deals, in which it connects from sites that are near telephone central offices, but not within them, that have proven successful. 'It does impact us on the bottom line,' Mr. Holland said. 'It does not prevent us from continuing to aggressively expand our networks and it does not impact our ability to interconnect' with local exchange carriers."[76]

Second, policy makers should recognize the long-term, incentive effects of interfering in contractual arrangements and long-term commitments. This is especially true when specialized, long-lived assets are involved. At the time of making investment decisions, those who are risking their capital need assurance that, at some point in the future, the government will not change the rules of the game. That kind of *ex post* recontracting has the most damaging effect on investment incentives. A company will be less likely to invest in new productive capacity if it faces the threat that, at some point in the future, it will be forced to share the benefits of that capacity with its competitors.

A correct reading and application of the new institutional economics provides a dynamic, evolutionary view of markets and institutions. It opposes the self-aggrandizing use of the powers of government to give one set of parties contractual advantages over their competitors. It supports, instead, the use of and the need for adaptive regulatory mechanisms, the promotion of balanced competition and removal of unnecessary regulatory constraints. In this proceeding, it supports the kind of price cap reforms proposed by USTA.

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[76] "Court Overturns F.C.C. Rules on Baby Bells," NEW YORK TIMES, June 11, 1994, p. 27.

Table 1
Competitive Access Providers:
Summary by State and City as of May 1994

STATE	EXISTING CITY/AREA	CAP	PLANNED CITY/AREA	CAP
ALABAMA	Andalusia	Deltacom		
	Anniston	Interstate Fibernet	Birmingham	American Comm. Svcs. (ACSI)
	Birmingham	Metrex, Privacom, Interstate FiberNet	Huntsville	American Comm. Svcs. (ACSI)
	Dothan	Deltacom	Mobile	American Comm. Svcs. (ACSI)
	Gadsden	Interstate Fibernet	Montgomery	American Comm. Svcs. (ACSI)
	Leeds	Interstate Fibernet		
	Ozark	Deltacom		
	Pell City	Interstate Fibernet		
ARIZONA	Phoenix	Intelcom, City Signal, TCG, Electric Lightwave	Phoenix	MFS
ARKANSAS	Little Rock	Entergy		
CALIFORNIA	Bel Air	MFS	Anaheim	Linkatel
	Beverly Hills	MFS, TCG	Burlingame	MFS
	Burbank	MFS, TCG	Concord	Phoenix Fiberlink
	Century City	MFS, TCG	Cupertino	MFS
	Culver City	TCG, Bay Area Teleport	Cypress	Linkatel
	East Los Angeles	Bay Area Teleport	Foster City	MFS
	El Monte	TCG	Irvine	Linkatel
	El Segundo	MFS, TCG	Kearney Mesa	Linkatel, TCG, Time-Warner
	Fremont	TCG	Lafayette	TCG
	Glendale	TCG, Bay Area Teleport	La Jolla	Linkatel, TCG, Time-Warner
	Hollywood	MFS, TCG	Long Beach	Linkatel,MFS
	LA Airport	MFS, TCG, Bay Area Teleport	Menlo Park	MFS
	Lakewood	Linkatel	Millbrae	MFS
	Lancaster	Bay Area Teleport	Mission Valley	Linkatel, Time-Warner
	Lodi	Bay Area Teleport	Mountain View	MFS
	Long Beach	Linkatel	Newport Beach	Linkatel
	Los Angeles	MFS, TCG, Bay Area Teleport	Palo Alto	MFS, TCG
	Los Gatos	Bay Area Teleport	Pleasanton	TCG
	Milpitas	MFS, TCG	Rancho Bernardo	Time-Warner
	Morgan Hill	Bay Area Teleport	Rancho Cordova	Electric Lightwave
	Oakland	TCG, Bay Area Teleport	Redwood City	MFS
	Rancho Cordova	Bay Area Teleport	Sacramento	Electric Lightwave
	Sacramento	Phoenix Fiberlink	San Bruno	MFS
	San Bernadino	Bay Area Teleport	San Carlos	MFS
	San Diego	Electric Lightwave, Linkatel, Time-Warner	San Mateo	MFS
	San Francisco	MFS, TCG, Bay Area Teleport	Santa Ana	Linkatel
	San Jose	MFS	Santa Monica	TCG

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STATE	EXISTING CITY/AREA	CAP	PLANNED CITY/AREA	CAP
CALIFORNIA (cont...)	Santa Barbara	Wiltel	Sorento Mesa	Linkatel, TCG
	Santa Clara	MFS, TCG	Walnut Creek	TCG
	Santa Monica	MFS		
	Sherman Oaks	MFS		
	Sunnymead	Bay Area Teleport		
	Sunnyvale	MFS		
	Thousand Oaks	Bay Area Teleport		
	Torrance	Linkatel		
	Van Nuys	Bay Area Teleport		
	West Hollywood	MFS, TCG		
	Westwood	MFS, TCG		
	Woodland Hills	TCG		
COLORADO	Colorado Springs	IntelCom	Boulder	IntelCom
	Denver	TCG, IntelCom, Jones Lightwave, MFS		
	Fort Collins	IntelCom		
	Pueblo	IntelCom		
CONNECTICUT	Hartford	MFS		
	Menden	American Lightwave		
	Meriden	American Lightwave		
DELAWARE	Wilmington	Delaware Lightwave (MFS), Locate	Wilmington	MFS, Eastern TeleLogic
DIST. OF COL.	Washington DC	MFS, Locate		
FLORIDA	Altamonte Springs	Time-Warner	Brandon	Fl. Digital Media Partners
	Boyton Beach	Locate	Clearwater	MFS, Wiltel, Florida Dig. Media Partners, IC I
	Delray Beach	Locate	Ft. Lauderdale	MCI Metro/ATS, Amer. Comm. Svcs. (ACSI)
	Fort Lauderdale	TCG	Jacksonville	American Comm. Svcs. (ACSI)
	Jacksonville	Intermedia, AlterNet, Jacksonville Teleport	Lakeland	People's Cable
	Lakeland	Intermedia	Manatee County	Paragon Cable, Time-Warner
	Melbourne	FiberCap	Miami	MCI Metro/ATS, ACSI, MFS
	Miami	Intermedia, TCG	Orlando	American Comm. Svcs. (ACSI)
	Orlando	Intermedia	Pensacola	American Comm. Svcs. (ACSI)
	St. Petersburg	Intermedia, Wiltel, Paragon Cable, Jones Lgt.	St. Petersburg	MFS, Fl. Dig. Media Partners, Time-Warner
	Tallahassee	Intermedia	Sarasota	Intermedia
	Tampa	Intermedia, Jones Lightwave	Tampa	MFS, Wiltel, Fl. Dig. Media Partners, Time-Warn
	West Palm Beach	TCG	West Palm Beach	American Comm. Svcs. (ACSI)

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STATE	EXISTING CITY/AREA	CAP	PLANNED CITY/AREA	CAP
GEORGIA	Atlanta	MFS, Jones Lgt., MCI Metro/ATS, ATI, Interstate FiberNet	Albany	American Comm Svcs. (ACSI)
	Augusta	Jones Intercable	Atlanta	ACSI, MCI Metro/ATS, FiberSouth
	Columbus	Interstate FiberNet	Athens	American Comm Svcs. (ACSI)
	LaGrange	Interstate FiberNet	Augusta	American Comm Svcs. (ACSI)
	Newnan	Interstate FiberNet	Macon	American Comm Svcs. (ACSI)
	Savannah	PalmettoNet	Savannah	American Comm Svcs. (ACSI)
HAWAII	Honolulu	Digital Transport Inc. (DTI)	Hawaii	Time-Warner
	Oahu	Digital Transport Inc. (DTI), St. of Hawaii (Oceanic Cable)		
IDAHO				
ILLINOIS	Chicago (Metro)	MFS, TCG	Metropolis	Kentucky DataLink
	Dekalb	Time Warner		
INDIANA	Indianapolis	City Signal, Time Warner, Indiana Digital		
	Terre Haute	Time-Warner, Indiana Digital		
	Lafayette	Indiana Digital		
IOWA	Cedar Rapids	MCLEOD Telemanagement		
	Des Moines	IOR Telecom, MWR, MFS		
	Iowa City	MCLEOD Telemanagement		
KANSAS	Kansas City	MFS, Kansas City Fibernet		
	Wichita	Multimedia Hyperion		
KENTUCKY	Calvert City	Kentucky Data Link	Louisville	IntelCom Grp./Mid-Am. Cable, ACSI
	Castleberry	Kentucky Data Link		Louisville Lightwave, Kentucky Fiberlink
	Georgetown	Locate	State of Ky.	MFS
	Lexington	Kentucky Data Link, Quest Eng.		
	Louisville	IntelCom Group/Mid-Am. Cable, Americall		
	Madisonville	Kentucky Data Link		
	Paducah	Locate, Kentucky Data Link		
	Princeton	Kentucky Data Link		

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STATE	EXISTING CITY/AREA	CAP	PLANNED CITY/AREA	CAP
LOUISANA	New Orleans	Two-Way Communications, Locate	Baton Rouge	American Comm. Svcs. (ACSI)
			Lafayette	American Comm. Svcs. (ACSI)
			New Orleans	Am. Com. Svcs. (ACSI), MCI Metro/ATS, LA Fiber
			Shreveport	American Comm. Svcs. (ACSI)
MAINE			Southern Area	TCG
MARYLAND	Baltimore	MFS, Balt. Gas & Elec., Locate		
	Hagerstown	ValleyNet		
MASSACHUSETTS	Andover	TCG	Boston (Metro)	Cablevision, MCI/Metro
	Boston	MFS, TCG, Locate	Eastern Mass.	TCG, MFS
	Brockington	TCG		
	Burlington	MFS, TCG		
	Cambridge	MFS, TCG		
	Dedham	TCG		
	Easton	TCG		
	Framingham	TCG		
	Lawrence	TCG		
	Lexington	MFS		
	Lincoln	MFS		
	Malden	TCG		
	Marlboro	TCG		
	Medford	TCG		
	Natick	TCG		
	Needham	TCG		
	Newton	TCG		
	North Reading	TCG		
	Quincy	MFS, TCG		
	Reading	TCG		
	Somerville	MFS, TCG		
	Springfield	Brooks (Fivecom)		
	Waltham	MFS, TCG		
	Wilmington	TCG		
	Woburn	TCG		

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MICHIGAN	AnnArbor	City Signal	Detroit	MFS
	Detroit	TCG, City Signal	Saginaw	TCG
	Grand Rapids	City Signal	Muskegon	City Signal
	Lansing	City Signal		
MINNESOTA	Minneapolis-St. Paul	MFS, FiberCom, Continental Cable		
MISSISSIPPI	Jackson	Access Transmission Svcs.	Biloxi	American Comm. Svcs. (ACSI)
			Jackson	American Comm. Svcs. (ACSI)
MISSOURI	Kansas City	MFS, Kansas City Fibernet	St. Louis	FiberNet
	Springfield	Springfield FiberNet	State of Mo.	TCI
	St. Louis	MFS, TCG, FiberNet, MCI Metro, F.A.S.T.		
MONTANA				
NEBRASKA	Kearney	Cable One		
	Omaha	TCG, MFS		
NEVADA	Las Vegas	City Signal		
NEW HAMPSHIRE	Portsmouth	TCG	Nashua	MFS
			Portsmouth	TCG
			Southern Area	MFS
NEW JERSEY	Camden	Eastern TeleLogic	Southern N.J.	TCG
	Northern N.J.	MFS, TCG, MH Lightnet, Locate		
NEW MEXICO	Hobbs	Eastern New Mexico Co-op	Albuquerque	IntelCom
			State of N.M.	Jones Lightwave

Table 1
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STATE	EXISTING CITY/AREA	CAP	PLANNED CITY/AREA	CAP
NEW YORK	Albany	MFS, Hyperion	New York (Metro)	MCI/Metro
	Buffalo	MFS, Hyperion, Locate		
	Long Island	TCG, Cablevision, Locate, MFS		
	Mamaroneck	TCG		
	New York (Metro)	MFS, TCG, Locate, Cablevision		
	Rochester	ACC Corp.		
	Syracuse	Hyperion		
	Westchester	TCG		
	White Plains	MFS, TCG, NNI		
	Yonkers	MFS		
NORTH CAROLINA	Cary	FiberSouth	Asheville	American Comm. Svcs. (ACSI)
	Charlotte	IOG-Access Svcs., Locate, Charlotte AXS	Charlotte	ACSI, Time-Warner
	Durham	FiberNet	Currituck County	Cox FiberNet
	Raleigh	FiberSouth	Durham	FiberNet, Am. Lightwave, FiberSouth, Time- Warn
			Greensboro	American Comm. Svcs. (ACSI), ICG
			Raleigh	Time-Warner, FiberNet
			Research Tri. Park	FiberNet, Am. Lightwave, FiberSouth
			State of N.C.	Jones Lightwave
			Winston-Salem	American Comm. Svcs. (ACSI)
NORTH DAKOTA				
OHIO	Cincinnati	FiberNet, IntelCom, City Signal, Time-Warner, WU-ATS, Ohio Links	Akron	IntelCom
			Butler	IntelCom
	Cleveland	Intelcom Group	Clark	IntelCom
	Columbus	City Signal,Time Warner	Cleveland	TCG
	Dayton	Intelcom Group	Cleveland-Cuyahoga	MFS, City Signal, IntelCom, Time-Warner, TCG
	Lima	Time-Warner	Cincinnati	IntelCom, Ohio Links, City Signal, Time-Warner, WU-ATS
	Mansfield	Adelphia		
	Marysville	Time-Warner	Columbus-Franklin	MFS, City Signal, Fibertel, Time-Warner, W U
	Mason/Lebanon	Coaxial Cable	Crawford	Cablevision
	Warren	TCI	Delaware	Fibertel, Time-Warner
			Erie	Cablevision
			Geauga	Cablevision
			Greene	City Signal
			Hamilton	City Signal, FiberNet, IntelCom, Western Union

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			Huron	Cablevision
			Lake	Cablevision
			Lorain	Cablevision
			Lucas	City Signal, IntelCom
			Mahoning	City Signal, IntelCom
			Medina	Cablevision, IntelCom
			Montgomery	City Signal, IntelCom
			Montrose	IntelCom
			Morrow	Cablevision
			Oxford	Locate
			Portage	IntelCom, Cablevision
			Richland	Cablevision
			Summit	IntelCom, Time-Warner, Cablevision
			Tipp City	Time-Warner, IntelCom
			Toledo	IntelCom
			Troy	Time-Warner, IntelCom
			Trumbell	City Signal, IntelCom
			Union	Fibertel
			Wayne	Cablevision
			Wood	City Signal, IntelCom
OKLAHOMA	Broken Arrow	PSO Metrolink		
	Oklahoma City	Cox Cable, Dobson Fiber		
	Tulsa	PSO Metrolink		
OREGON	Beaverton	ELectric Lightwave, PacNet, FiberNet	Beaverton	MFS
	Portland	ELectric Lightwave, PacNet		
PENNSYLVANIA	Allegheny County	TCG, MFS, Penn Access	Erie	Penn Access
	Beaver County	TCG		
	Carlisle	Valletnet		
	Chambersburg	Valletnet		
	Pittsburgh	MFS,TCI/Penn Access, Locate		
	Philadelphia	MFS, Eastern TeleLogic, Locate		

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RHODE ISLAND	State of R. I.	Locate	Providence	MFS, TCG, Jones, Brooks
SOUTH CAROLINA	Cayee	MPX	Charleston	American Comm. Svcs. (ACSI), ICG
	Charleston	PalmettoNet	Columbia	American Comm. Svcs. (ACSI), ICG
	Columbia	MPX, PalmettoNet	Greenville	American Comm. Svcs. (ACSI), ICG
	Florence	PalmettoNet	Spartanburg	ICG
	Myrtle Beach	PalmettoNet		
	St. George	PalmettoNet		
	Sumter	PalmettoNet		
	Waterboro	PalmettoNet		
	Yemassee	PalmettoNet		
SOUTH DAKOTA				
TENNESSEE	Memphis	City Signal	Chattanooga	American Comm. Svcs. (ACSI)
	Nashville	City Signal, IOG-Access Svcs.	Knoxville	American Comm. Svcs. (ACSI)
			Memphis	Time-Warner, Access Transmission Svcs.
			Nashville	Hyperion, ACSI, Access Transmission Svcs.
TEXAS	Addison	MFS	Denton	MFS, TCG
	Austin	Time-Warner	Houston	Time-Warner
	Carrolton	MFS, TCG	Louisville	MFS
	Dallas	MFS,TCG, MCI Metro, FiberSouth, Phonoscope Com.		
	Farmers Branch	MFS		
	Houston	MFS,Phonoscope,TCG, MCI Metro, FiberSouth		
	Irving	TCG, MFS		
	Plano	MFS, TCG		
	Richardson	MFS		
	San Antonio	FiberSouth		
UTAH	Salt Lake City	Questar Telecom, IntelCom	Salt Lake City	Electric Lightwave
VERMONT			State of Vt.	Hyperion

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STATE	EXISTING CITY/AREA	CAP	PLANNED CITY/AREA	CAP
VIRGINIA	Blacksburg	ValleyNet	Chesterfield	Virginia Metrotel
	Bluefield	ValleyNet	Hampton Rds	Cox FiberNet
	Charlottesville	ValleyNet	State of Va.	Jones Lightwave
	Covington	ValleyNet		
	Edinburg	ValleyNet		
	Harrisonburg	ValleyNet		
	Lexington	ValleyNet		
	Norfolk	Cox Fibernet		
	Radford	ValleyNet		
	Richmond	AlterNet of Virginia, Hyperion, Virginia Metrotel		
	Roanoke	ValleyNet		
	Staunton	ValleyNet		
	Stephens City	ValleyNet		
	Troutville	ValleyNet		
	Virginia Beach	Cox FiberNet		
	Waynesboro	ValleyNet		
	Wytheville	ValleyNet		
WASHINGTON	Issaqua	TCG	Everett	TCG
	Kennewick	Northwest Microwave	Kirkland	TCG
	Seattle	FiberNet, Electric Lightwave, TCG, Digital Direct Northwest Microwave, PacNet, MFS		
	Spokane	Electric Lightwave		
	Wenatchee	Northwest Microwave		
WEST VIRGINIA	Martinsburg	ValleyNet		
WISCONSIN	Milwaukee	TCG		
WYOMING				

Source: Bellcore, 1994

Figure 1-a

Distribution of Access Revenues

Baltimore

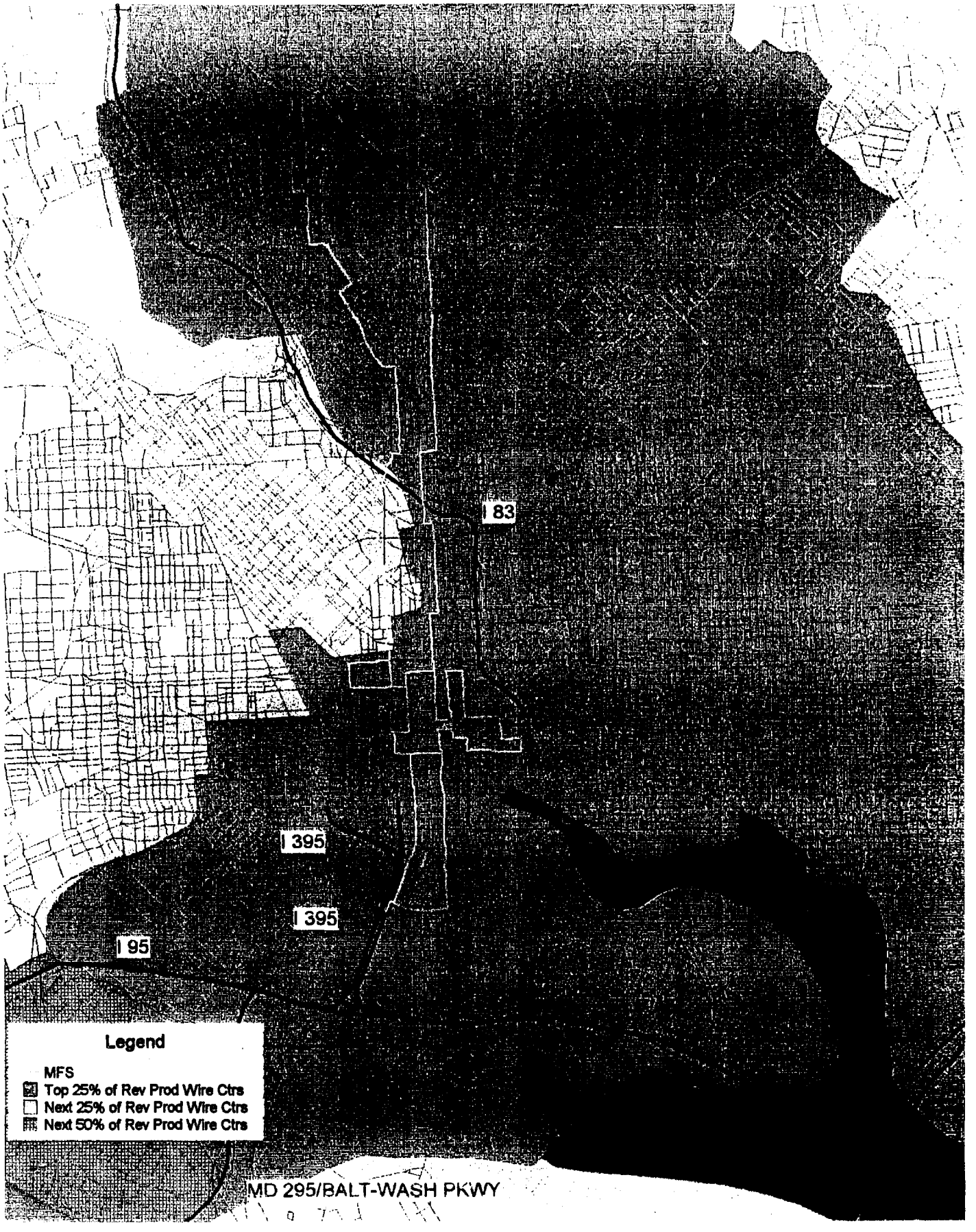
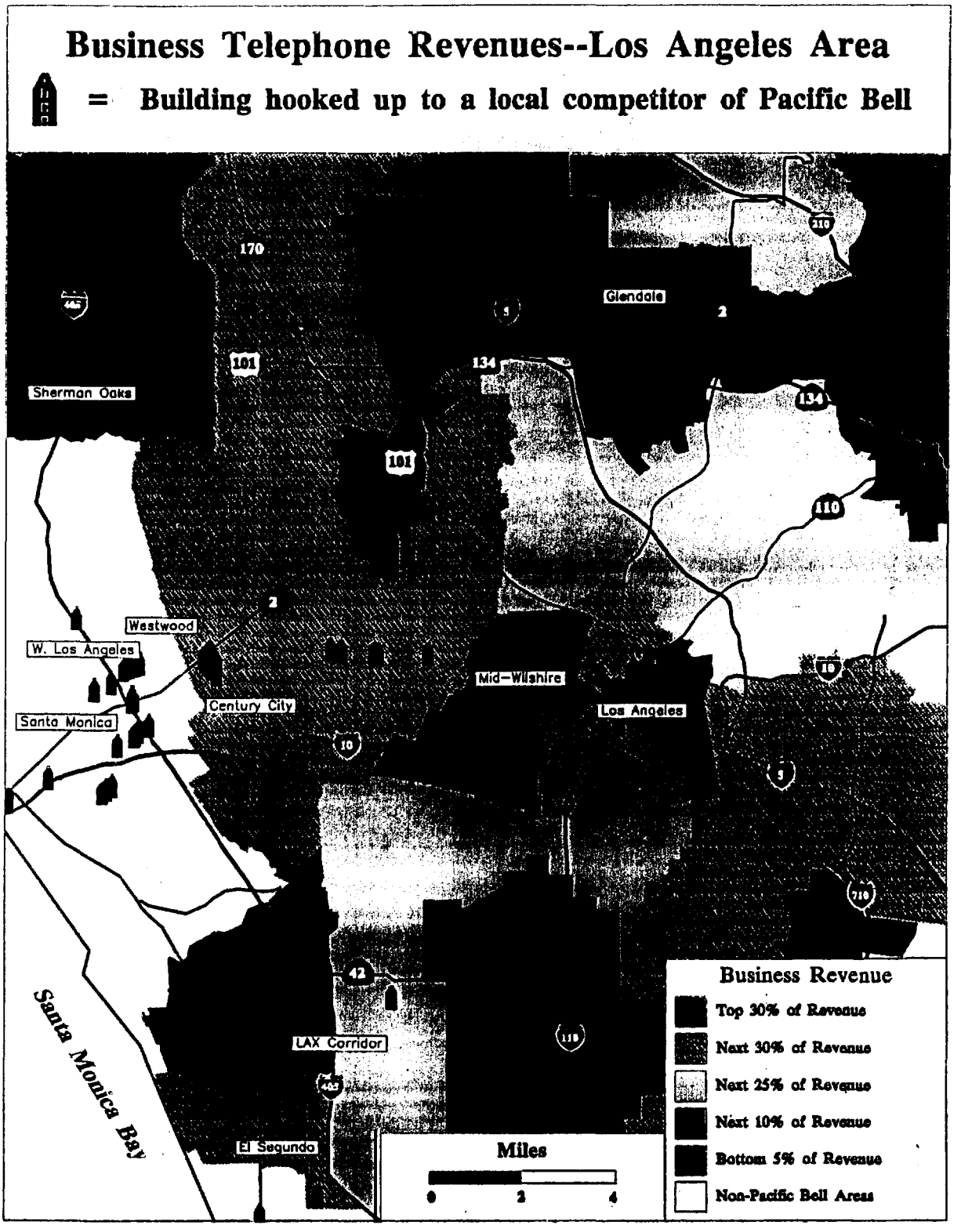


Figure 1-b


Business Telephone Revenues--Los Angeles Area
= Building hooked up to a local competitor of Pacific Bell
Glendale
Sherman Oaks
Westwood
W. Los Angeles
Century City
Santa Monica
Mid-Wilshire
Los Angeles
LAX Corridor
El Segundo
Santa Monica Bay
Miles
0
2
4
Business Revenue
Top 30% of Revenue
Next 30% of Revenue
Next 25% of Revenue
Next 10% of Revenue
Bottom 5% of Revenue
Non-Pacific Bell Areas